REMARKS

Status of the Claims

Claims 1-2 and 4-17 are pending. Claims 18-24 are withdrawn from consideration. Claims 1-2 and 4-17 are rejected. Claims 18-24 are canceled. No claim amendments were made. Reconsideration of the pending claims is respectfully requested in view of the arguments presented *infra*.

The U.S.C. §103(a) rejections

Claims 1-2 and 4-13 are rejected under 35 U.S.C. §103(a) as being unpatentable over **Hofmeister** in view of **White** *et al.* (U.S. 6,086,362).

As applied in the 35 U.S.C. 102(e) rejection mailed December 13, 2001, the Examiner states that **Hofmeister** shows the invention as claimed including a load lock chamber with a double dual slot load lock constructed at a same location for a multi-chamber apparatus (Figs. 2-3; col. 2, ll. 62 – col. 3, ll. 57), but fails to expressly disclose a heating plate and a cooling plate located in different slots of the loadlock chamber. Further, **White** *et al.*

disclose a loadlock chamber which includes both heating plates and cooling plates (Abstract). Thus, one of ordinary skill in the art would modify the apparatus of **Hofmeister** so as to include heating plates and cooling plates in different slots because the presence of both heating plates and cooling plates in all of the slots in the loadlock chamber allows for more flexibility in the process.

Hofmeister discloses a substrate transport and load lock assembly built at one location as a single unit. The assembly generally has a frame, a substrate elevator and a transport (Fig. 3, col. 3, lines 43-44). The frame of the assembly has three stacked areas. The top and bottom areas function as load locks and are isolated from the middle area and from each other only by the movement and subsequent location of the sealing plates on the substrate supports when moved by the elevator (Fig. 3, col. 3, lines 48-50; col. 4,lines 32-47). Each load lock area receives only one of the two substrate supports which move independently of the other via the substrate elevator (Fig. 3, col. 3, ll. 67 to col. 4, ll. 23). The substrate supports each contain a plurality of shelves to support individually a plurality of substrates simultaneously.

White *et al.* teach a glass substrate processing system comprising an input and an output load lock chambers at separate location and a process chamber (col. 5, ll. 26-28). The load lock chambers can be configured, using removable components, to provide a transition between two pressures and/or to provide a heating configuration for heating the substrate and/or to provide a cooling configuration for cooling the substrate and/or to provide an ashing process (col. 2, ll. 56-65). When in a heating configuration, the load lock contains a heating assembly attached to the top of the chamber near the chamber lid and a heating platen placed in the bottom of the chamber to heat and raise a substrate toward the heating assembly (col. 3, ll. 7-14). When used to cool a substrate, a cooling assembly and cooling platen are switched for the heating assembly and heating platen (col. 3, ll. 41-49). The load locks can be reconfigured easily by completely removing the components previously installed (col. 6, ll. 46-48).

In Applicants invention as previously amended in claim 1, the double load locks comprise an upper and a lower load lock where each load lock is a distinctly separate unit although constructed at the same location. Each load lock has dual slots

comprising an upper slot to receive pre-processed substrates from the ACLS and a lower slot to receive processed substrates from the transfer chamber. It is a recited feature that a heating plate is located in the upper slots of each of the dual slot load locks and a cooling plate is located in the lower slots of same. This allows simultaneous use of the dual slotted load locks which, *inter alia*, improves throughput.

Hofmeister teaches a system comprising load lock areas each capable of loading substrates to/from a transfer area and from/to a portable substrate carrier which possibly may read on a double load lock system. **White** *et al.* teach that a load lock can heat or cool a substrate. However, these are just teachings of individual elements of Applicants' invention. No motivation or suggestion to combine is found in **White** *et al.* particularly considering that the inventive concept in **White** *et al.* is to a system where a load lock is configured with easily removable components to either heat or to cool the substrate.

One must consider what **White** *et al.* fairly suggest to a person having ordinary skill in this art and not pick and choose those elements that support the Examiner's position. **White** *et al.*

distinctly teach easily removable components within a load lock to either heat or cool substrates; to interpret this teaching as motivation to incorporate both heating/cooling elements within a single load lock directly contradicts the teaching of the reference. Applicants respectfully submit that motivation for such a combination comes from the instant invention and can justifiably be considered impermissible hindsight by the Examiner.

Applicants reiterate that the instant invention comprises both a heating plate and a cooling plate in separate upper and lower slots in both load locks that work in conjunction to facilitate faster processing of substrates. One of ordinary skill in the art may recognize that heating and/or cooling a substrate in a load lock may facilitate processing, however the heating/cooling functions must be workable within the system. Assuming, *arguendo*, that **White** *et al.* suggests to one of ordinary skill in the art to put a heating assembly and a cooling assembly in each of the load lock areas in the substrate transport and load lock assembly of **Hofmeister**, Applicants submit no reasonable expectation of success is to be found in view of the construction and function of the substrate transport and load lock assembly disclosed herein. Should one of ordinary skill in the art

install a heating assembly and a cooling assembly within each substrate support elevator, the multiple substrates contained on individual shelves within the substrate support within the elevator would not be uniformly heated or cooled as they are horizontally disposed and vertically spaced therein. Applicants further submit that to place either a removable or permanent heating or cooling assembly in a substrate support that moves as a whole within the transport system would be problematical and inefficient. This neither facilitates process throughput nor product uniformity.

Claims 2 and 4-13 depend from previously amended independent claim 1. These claims further limit the substrate processing system and/or the double dual slotted load lock. Thus, as **Hofmeister** in combination with **White** *et al.* does not render the instant invention as recited in amended claim 1 obvious, the incorporation of any of the limitations of dependent claims 2 and 4-13 into amended claim 1 also does not render the instant invention obvious.

Claims 14-16 are rejected under 35 U.S.C. §103(a) as being unpatentable over **Hofmeister** in view of **White** *et al.* as

applied to claims 1-2 and 4-13 and further in view of **Iwai** *et al.* Claim 17 is rejected under 35 U.S.C. §103(a) as being unpatentable over **Hofmeister** in view of **White** *et al.* as applied to claims 1-2 and 4-13 and further in view of **Maydan** *et al.* These rejections are respectfully traversed.

Applicants' invention, **Hofmeister** and **White** *et al.* are as described *supra.* **Iwai** *et al.* teach using a flip type door that securely closes a chamber through which a number of semiconductor wafers are placed (Fig. 25, col. 33, line 65 to col. 34, line 23). Furthermore, in the art, flip-type doors can be replaced with flip-type slit valves. **Maydan** *et al.* discloses a filtering system that is used to remove particulates from the load lock chamber (col. 13, line 61-col. 15, line 35).

Claims 14-17 depend from independent claim 1 and further limit the components of or the functional relationship of the components to the substrate processing system as recited in the previously amended claim 1. Flip-type doors or valves and a filtering system are specific limitations recited in dependent claims 14-16 and 17. Applicants submit that, as **Hofmeister** in combination with **White** *et al.* do not render the instant invention as

recited in claims 1-2 and 4-13 obvious, neither **Iwai** *et al.* nor **Maydan** *et al.* in further combination with **Hofmeister/White** *et al.*, respectively, render the instant invention obvious.

In view of the above remarks, Applicants respectfully submit that obviousness can not be established by combining the teachings of the prior art absent some teaching, suggestion or motivation supporting the combination to do so. At a minimum absent a suggestion or teaching in **White** *et al.* that both a heating assembly and a cooling assembly can be configured simultaneously and permanently into a load lock, Applicants' invention as recited in previously amended claim 1 is not rendered obvious by combining **White** *et al.* with **Hofmeister.** Nor does the further combination with either **Iwai** *et al.* or **Maydan** *et al.* render the invention obvious as discussed *supra.* Thus, the invention as a whole was not obvious to one of ordinary skill in the art at the time the invention was made. Accordingly, Applicants respectfully request that the rejection of claims 1-2 and 4-17 under 35 U.S.C. §103(a) be withdrawn.

This is intended to be a complete response to the Office Action mailed October 4, 2002. If any issues remain outstanding, the Examiner is respectfully requested to telephone the undersigned attorney of record for immediate resolution. Applicants believe that no fees are due, however, should this be in error, please debit Deposit Account No. 07-1185 on which the undersigned is allowed to draw.

Respectfully submitted,

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